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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,009	10/21/2003	Jon Raymond Groh	124325/11908 (21635-0113)	5676

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EXAMINER

KERSHTEYN, IGOR

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/691,009

Applicant(s)

GROH ET AL.

Examin r

Igor Kershteyn

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-- The MAILING DATE of this communication appears on the cover sheet with the corresp ndence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 13-18 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/21/2003.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-12, drawn to an axial flow turbine rotor, classified in class 416, subclass 213R.
- II. Claims 13-18, drawn to a method for preparing a rotor assembly, classified in class 29, subclass 889.21.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the axial flow turbine rotor assembly can be made by another and materially different process such as mechanical joining of the rotor ring to the blades and to the hub.

During a telephone conversation with Mr. K. Scott O'Brian (Reg. No. 42,946) on 01/07/2005 a provisional election was made with traverse to prosecute the invention of an axial flow turbine rotor, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-18 withdrawn from further

consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, and 8-10 rejected under 35 U.S.C. 102(b) as being anticipated by Barth et al. (3,571,906).

In figure 8, Barth et al. teach an axial-flow turbine rotor assembly, comprising: a bladed ring including a ring 13, and a plurality of turbine blades 11 affixed to the ring and extending radially outwardly from the ring 13; a central disk hub 15; and a solid state weld joint (not numbered) between the central disk hub 15 and the ring 13 of the bladed ring.

Claims 1, and 8-10 rejected under 35 U.S.C. 102(b) as being anticipated by Bonneville et al. (3,763,549).

In figure 1, Bonneville et al. teach an axial-flow turbine rotor assembly, comprising: a bladed ring 38 including a ring 52, and a plurality of turbine blades 53 affixed to the ring 52 and extending radially outwardly from the ring 52; a central disk

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hub 28; and a solid state weld joint (not numbered) between the central disk hub 28 and the ring 52 of the bladed ring 38.

Claims 1, and 8-10 rejected under 35 U.S.C. 102(b) as being anticipated by Lamatsch (3,582,605).

In figure 3, Lamatsch teaches an axial-flow turbine rotor assembly, comprising: a bladed ring including a ring 32, and a plurality of turbine blades 34 affixed to the ring and extending radially outwardly from the ring 32; a central disk hub 31; and a solid state weld joint 36 between the central disk hub 31 and the ring 32 of the bladed ring.

Claims 1, and 8-10 rejected under 35 U.S.C. 102(b) as being anticipated by Amos et al. (5,746,579).

In figure 1, Amos et al. teach an axial-flow turbine rotor assembly, comprising: a bladed ring including a ring 22, and a plurality of turbine blades 15 affixed to the ring and extending radially outwardly from the ring 22; a central disk hub 16; and a solid state weld joint (not numbered) between the central disk hub 16 and the ring 22 of the bladed ring.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonneville et al. (3,763,549) in view of Egan et al. (4,592,120).

Bonneville et al. teach all the claimed subject matter except that they don't teach the ring is made of a first material, and the turbine blades are made of a second material, the ring is made of a first nickel-base superalloy, and the turbine blades are made of a second nickel-base superalloy, the ring and the central disk hub are made of a first material, and the turbine blades are made of a second material, the ring and the central disk hub are made of a first nickel-base superalloy, and the turbine blades are made of a second nickel-base superalloy, the ring is made of a first material, the turbine blades are made of a second material, and the central disk hub is made of a third material, the ring has a first grain size, the central disk hub has a second grain size smaller than the first grain size, and the joint between the central disk hub and the ring has a third grain size smaller than the second grain size.

Egan et al. in figures 1 and 5-8, teach an axial flow turbine rotor 10,40 having a hub 14,44, a plurality of blades 12,42, a ring 50,52, the ring 50,52 is made of a first material, and the turbine blades 12,42 are made of a second material, the ring 50,52 is made of a first nickel-base superalloy, and the turbine blades 12,42 are made of a second nickel-base superalloy, the ring 50,52 and the central disk hub 44 are made of a first material, and the turbine blades 42 are made of a second material, the ring and the central disk hub 14 are made of a first nickel-base superalloy, and the turbine blades 12 are made of a second nickel-base superalloy, the ring is made of a first material, the turbine blades 12 are made of a second material, and the central disk hub 14 is made of

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a third material, the ring 30 has a first grain size, the central disk hub 14 has a second grain size smaller than the first grain size, and the joint 16 between the central disk hub and the ring has a third grain size smaller than the second grain size.

Since Bonneville et al. and Egan et al. are analogous art because they are from the same field of endeavor, that is the axial flow turbine rotor art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the rotor of Bonneville et al. with the materials as taught by Egan et al. for the purpose of providing a turbine rotor assembly having discrete high rupture strength blades permanently attached to a high burst strength alloy hub.

Prior Art

Prior art made of record but not relied upon is considered pertinent to Applicant's disclosure and consist of five patents.

Berry et al. (3,786,147) is cited to show a method of friction welding used in a process of making a turbine blade and advantages of friction welding over diffusion bonding.

Cross (4,096,615) is cited to show a method of fabrication of multi-metal turbine rotor.

Ewing (4,270,256) is cited to show a method of fabrication of multi-metal turbine rotor.

Novotny et al. (4,784,572) is cited to show a method of fabrication of multi-metal turbine rotor.

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Neal et al. (4,964,564) is cited to show a method of fabrication of multi-metal turbine rotor, advantages of solid state diffusion bonding over friction welding.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Kershteyn whose telephone number is **(571)272-4817**. The examiner can be reached on Monday-Friday from 8:00 a.m. to 4:30 p.m.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached on **(571)272-4820**. The fax number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308 0861.

IK
January 12, 2005



Igor Kershteyn
Patent examiner.
Art Unit 3745


EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
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1/19/05